UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>12 November 2008</u>.

2a)☒ This action is **FINAL**.　　2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1 and 4-26</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1 and 4-26</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Remarks

1.   This office action is in response to the amendment filed on 11/12/2008.

2.   Claims 2 and 3 have been canceled.

3.   Claims 1, 9, 15, 19 and 21 have been amended.

4.   The 35 U.S.C. 101 rejections of claims 1-8 and 15-20 are withdrawn in view of
the Applicant's amendment.

5.   Claims 1 and 4-26 remain pending and have been examined.

Response to Arguments

6.   Applicant's arguments filed on 11/12/2008, in particular on pages 9-10, have
been fully considered but they are not persuasive. For example:

-   At page 9, last paragraph, the Applicants submit that Testardi limits itself to
    "particular global variables within the program under test" as the target of
    initialization. At page 10, first paragraph, the Applicants further point out that
    Testardi does not disclose coupling multiple initialization routines to setup a
    target environment. Additionally, Testardi appears to limit itself to initializing
    global variables of a target environment only.
    However, examiner respectfully disagrees.
    Testardi discloses an example situation for a white box test that particular
    global variables within the program under test may need to be initialized (as

noted above). Furthermore, Testardi also discloses another example for black box testing that requires to initialize plurality of particular environmental parameters of the computing system e.g. shell variables, file system directory structures... (see for example, col.7, lines 11-22). Therefore, Testardi does disclose said limitation as the Applicants argued.

- At page 10, second paragraph, the Applicants submit that Testardi does not disclose the limitations including initializing involved software components and corresponding hardware components of the environment. However, examiner's position is that Testardi discloses "element 304 is then operable to set up any required <u>system environment</u> parameters in accordance with parameters defined by the test sequence as extracted in the element 300" (see for example, col.8, lines 51-54) and Testardi further discloses the debug tool has display feature to display testing value and results (col.7, lines34-50), memory allocation and file storage allocation (see for example, col.9, lines 19-23, "dynamic memory allocation or file storage allocation"). Therefore, it can be seen that certain hardware components (parameters) have to be initialized, e.g. I/O, memory and storage hardware components, to run test and direct the testing result to the display and collect the user input to the debug tools.

- At page 10, third paragraph, the Applicants assert that Testardi does not disclose coupling multiple initialization routines to be used to initialize a target environment. However, examiner respectfully disagrees.

As Testardi disclosed, "set up any required system environment parameters"
(see for example, col.8, lines 51-54), "shell variables", "file system directory
structures" (see for example, col.7, lines 17-19) and "force particular error
conditions" (see for example, col.9, lines 16-19), allocating memory and
allocating file storage (see for example, col.9, lines 19-23), it is obvious that all
these initialization settings for the variables, file system directory, memory and
error conditions requires different initialization routines to perform different
functionalities as addressed above. Therefore, Testardi still teaches such
limitation as the Applicants amended.

Claim Objections

7.   Claim 4 is objected to because of the following informalities: Claim 4 depends on
claim 3 which has been cancelled. For the purpose of compact prosecution, the
Examiner treats it as depending on claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1, 4-7, 9-12, 15-17, 19-24 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Testardi (Rich P. Testardi, US 6,249,882)

Claim 1:

Testardi discloses an apparatus for debugging source code, the apparatus

comprising: a programmable hardware device configured to execute a plurality of

executable code modules, the executable code modules comprising

- A function selector configured to enable a user to select a target function

    and associate a plurality of initialization routines with the target function

    (see for example, Fig.1, item 100, 108 "Test Manager", 110 "interpreter"

    and related text; also see col.6, lines 13-45, "desired test", "initialized the

    environment of computer");

- a function selector configured to generate an execution request in

    response to selection of the target function by a user (see for example,

    col.6, lines 30-31, "executive 112 within test manager 108 invokes the

    program under test 104 so as to perform the desired test sequence.");

- a task dispatcher configured to dispatch the at least one initialization

    routine in response to an execution request (see for example, col.6, lines

    32-34, "test manager 108 through interpreter 110 has initialized

    (dispatched) the environment of computer 102 as required to perform the

    desired test")

- a source code debugger configured to display state information (success/failure) (see for example, Fig.2, item 216 and related text, "Indicate Failure to Test User"); and

- the plurality of initialization routines configured to initialize a target environment to a particular state, including initializing at least one hardware component and at least one local variable, the at least one initialization routine selectively coupled by the user to the target function within a target application (see for example, Fig.2, item 206, Fig.3, item 304 "SETUP ENVIRONMENT FOR TEST ACCORDING TO PARAMETERS OF TEST SEQUENCE" and related text, also see col.7, lines 19-22, "particular global variables within the program under test may need to be initialized prior to performing the test sequence."; also see col.8, lines 51-67, "set up any required system environment parameters", "allow for local values to be define", col.9, lines 19-24, "dynamic memory allocation or file storage allocation").

but Testardi does not explicitly disclose using plurality of initialization routines.
However, Testardi also discloses setting different system parameters, variables, file system directory, injecting error conditions, invoking particular function and display/capturing testing input and output (see for example, col.7, lines 11-22 "parameters", lines 35-38, "captured output" "printout" "display", col.8, lines 51-67, "system environment", col.9, lines 13-16, "invoke particular functions within the program for testing purpose"; col.9, lines 19-24, "dynamic memory

allocation"). Therefore, it would have been obvious to one having ordinary skill in

the art at the time the invention was made to understand that said system

parameters, variables and other information have to be invoked by different

initialization routines and including initializing the hardware component, e.g.

hardware memory, storage and I/O for printout, capturing, displaying and storing

testing results.

Claim 4:

Testardi further discloses the apparatus of claim [3] 1, wherein the function

selector is integrated into the source code debugger (see for example, Fig.1, item

108, 112 and related text, "test Manager", "Executive")

Claim 5:

Testardi also discloses the apparatus of claim 1, wherein the particular state

corresponds to an application error (see for example, col.9, lines 6-28, "force

particular error conditions" and "force a particular function call to fail to simulate

such a resource allocation failure condition" and related detail description).

Claim 6:

Testardi also discloses the apparatus of claim 1, further comprising a deployed

system configured to dump information used to initialize the target environment

to the particular state (see for example, col.7, lines 23-24, "Element 208 is then

operable to execute the test sequence while capturing the generated output

results therefrom").

Claim 7:

Testardi further discloses the apparatus of claim 1, wherein the at least one

initialization routine comprises a function-independent initialization routine and a

function-dependent initialization routine (see for example, col.10, lines 15-31,

"Invoke desired procedures and functions with specific parameters" and "Display

function results from invocation of functions in the program under test").

Claims 9-12:

Claims 9-12 are method version by performing the claimed apparatus as in

claims 1 and 4-8 addressed above, wherein all claimed limitation functions have

been addressed and/or set forth above and certainly said computer

system/apparatus above would need to run and/or practice such function steps

disclosed by reference above. Thus, they also would have been obvious.

Claims 15-17:

Claims 15-17 are another apparatus version for performing the same function as

the claimed apparatus as in claims 1and 4-8 above, wherein all claimed limitation

functions have been addressed and/or set forth above and certainly said

computer system/apparatus above would need to run and/or practice such

function steps disclosed by reference above. Thus, they also would have been

obvious.

Claims 19-20:

Claims 19-20 are system version for performing the same functions as the

claimed apparatus as in claims 1and 4-8 above, wherein all claimed limitation

functions have been addressed and/or set forth above and certainly said

computer system/apparatus above would need to run and/or practice such

function steps disclosed by reference above. Thus, they also would have been

Claims 21-24:

Claims 21-24 are computer readable storage medium comprising computer

readable code for debugging source code, which are the product version of the

claimed methods discussed as in claims 9-12 above. It is well known in the

computer art to practice and store the computer readable code in such computer

readable storage medium. Therefore, these claims are also obvious over

Testardi.

10.   Claims 8, 13, 18 and 25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Testardi (Rich P. Testardi, US 6,249,882) in view of

Rosenberg (Jonathan B. Rosenberg, "How Debuggers Work")

Claims 8 and 18:

Testardi discloses the testing systems of claims 1 and 15 above respectively,

wherein the program debugging tool (debugger) can permit precise control of the

execution of particular modules or functions (see for example, col.9, lines 47-52,

"...conjunction with a program debugging tool (debugger) to permit precise

control of the execution of particular modules or functions within the program

under test..."), but does not explicitly disclose the precise control is "single step".

However, Rosenberg in the same analogous art about debugger discloses using

"single-step" to control the execution (Chapter 6, "Breakpoints and Single

Stepping", section Single-step, page 119). Therefore, it would have been obvious

to one having ordinary skill in the art at the time the invention was made to use

single-step in Testardi's system to precise control the execution of program. One

would have been motivated to do so to precise control the program execution as

once suggested by Rosenberg (Chapter 6, "Breakpoints and Single Stepping",

section Single-step, page 119, line 21, "Single-step is important because users

need to be able to 'watch' execution proceed."). So as applicants admitted the

prior art in the specification paragraph [0007].

Claims 13 and 25:

Testardi discloses the software testing method of claims 9 and 21 above

respectively, wherein the program debugging tool (debugger) can permit precise

control of the execution of particular modules or functions (see for example,

col.9, lines 47-52, "...conjunction with a program debugging tool (debugger) to

permit precise control of the execution of particular modules or functions within

the program under test…"), but does not explicitly disclose the precise control is

"single step". However, Rosenberg in the same analogous art about debugger

discloses using "single-step" to control the execution (Chapter 6, "Breakpoints

and Single Stepping", section Single-step, page 119). Therefore, it would have

been obvious to one having ordinary skill in the art at the time the invention was

made to use single-step in Testardi's system to precise control the execution of

program. One would have been motivated to do so to precise control the

program execution as once suggested by Rosenberg (Chapter 6, "Breakpoints

and Single Stepping", section Single-step, page 119, line 21, "Single-step is

important because users need to be able to 'watch' execution proceed."). So as

applicants admitted the prior art in the specification paragraph [0007].

11.   Claims 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Testardi (Rich P. Testardi, US 6,249,882) in view of Frascone (David

Frascone, "Debugging kernel modules with user-mode Linux")

Claims 14 and 26:

Testardi discloses the method of claims 9 and 21 above respectively, but does

not disclose the method further comprises recompiling kernel-mode code into

user-mode code. However, Frascone in the same analogous art about debugger

discloses debugging kernel modules with user-mode (see for example, p.1, lines

2-16, "the kernel hangs", user-mode Linux (UML) and related text). Therefore, it

would have been obvious to one having ordinary skill in the art at the time the

invention was made to combine Frascone's teachings into Testardi to provide

debugging code in the user-mode. One would have been motivated to recompile

kernel-mode code into user-mode (UML) which can be used to debug in user-

mode and avoid kernel hangs as once suggested by Frascone (see for example,

p.1, lines 2-16).

Conclusion

12.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

13.   Applicant's arguments with respect to claims rejection have been considered

Applicant's amendment necessitated additional explanation as presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in

37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed

within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zheng Wei whose telephone number is (571) 270-1059 and Fax number is (571) 270-2059. The examiner can normally be reached on Monday-Thursday 8:00-15:00.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

        Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571- 272-1000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Z. W./
Examiner, Art Unit 2192

/Tuan Q. Dam/
Supervisory Patent Examiner, Art Unit 2192